

ACTION
DESCRIPTION
MEMORANDUM
FOR
OPERABLE UNIT 2
FEASIBILITY STUDY/
CORRECTIVE MEASURES STUDY

October 1993

ADMS-100000

A-0002-000020

DOE National Environmental Policy Act
ENVIRONMENTAL ASSESSMENT DETERMINATION
Operable Unit 2 Feasibility Study/Corrective Measures Study

Based upon the description of the project contained in the attached Action Description Memorandum, I have determined that the proposed action fits the description of an action requiring the preparation of an environmental assessment as defined in 40 CFR 1508.9. Therefore, I approve the preparation of an environmental assessment of the proposed action described.

Date: 2/11/94

Signature: [Signature]
Mark N. Silverman
Title: Manager, Rocky Flats Office

Project Sponsor:

I concur with the recommendation to prepare an environmental assessment.

Date: 1/12/94

Signature: [Signature]
Martin H. McBride
Title: Acting Assistant Manager for
Environmental Restoration.

I have reviewed the project description and recommend that an environmental assessment be prepared to determine whether the project will have significant environmental impacts.

Date: January 5, 1993

Signature: [Signature]
Patricia M. Powell
Title: NEPA Compliance Officer

Regulatory citation that applies:

 This EA is listed in 10 CFR 1021, Appendix C to Subpart D as C .

 X This EA is not listed in 10 CFR 1021, Appendix C to Subpart D

1.0 INTRODUCTION

This Action Description Memorandum is prepared to provide sufficient information for a determination of the appropriate level of National Environmental Policy Act (NEPA) documentation for remedial action to be taken at Operable Unit (OU) 2 at the Department of Energy's Rocky Flats Plant (RFP) north of Golden, Colorado. The location of OU 2 is shown in Figure 1.

2.0 PURPOSE OF AND NEED FOR THE PROJECT

OU 2 is one of 16 operable units at RFP. OU 2 is identified as the 903 Pad, Mound and East Trenches and is located in and adjacent to the southeast portion of the developed area of the Plant. It consists of the 903 Pad (an abandoned drum storage area that has been paved to prevent resuspension of plutonium particulates), the Mound area (where drums of radionuclide-contaminated lathe coolant were buried and subsequently leaked before their removal) and the East Trenches area (where radioactively-contaminated sewage sludge was buried). Under provisions of the Comprehensive Environmental Response, Compensation and Liability Act, the 17 individual hazardous substance sites (IHSSs) of OU 2 must be characterized to identify the nature and extent of contamination. This step would be followed by identification and analysis of alternative remedial actions and selection and implementation of one or a combination of remedial actions.

Site characterization as well as identification and selection of the remedial action(s) will be described in a Feasibility Study/Corrective Measures Study (FS/CMS), preparation of which could start as early as FY '94. Because contamination above actionable levels may exist in three media (surface water, groundwater and soils), media-specific remedial actions will be developed but a single combined alternative, consisting of remedial actions for all three media, will be selected.

3.0 PROPOSED ACTION

Since preparation of the FS/CMS has not yet begun, neither has development of alternative remedial actions. However, information from the Remedial Investigation/RCRA Facilities Investigation Report, which is in preparation, is sufficient to permit development of a preliminary, generalized set of remedial actions (the Proposed Action) for the three media.

It is believed that the activities and impacts described here bound the expectable actions and impacts of OU 2 remedial activities. The Proposed Action assumes continued operation of the OU 2 Surface Water Interim Measure/Interim Remedial Action (IM/IRA) for Surface Water as well as the OU 2 Subsurface IM/IRA.

Surface water remediation by continued operation of the OU 2 surface water IM/IRA collection and treatment system on Walnut Creek. Modifications would be made to the existing collection and treatment plant to more fully automate the operation by installation of automated monitoring and measuring devices. The basic collection and treatment

facilities would not be changed and no environmental impacts would be expected from installation or operation of the improvements. Treated water would be released either to the natural surface drainage system as is presently done, or to the Plant's industrial water system. Releasing to the Plant's industrial water system would reduce downstream flows and could affect wetlands downstream of the diversion area, though the fact that wetland vegetation exists above the discharge point suggests that wetland vegetation there is not dependent on water discharges from the treatment system.

Groundwater remediation by installation of extraction wells and additional water treatment capacity equivalent to the existing groundwater treatment unit. Approximately 20 extraction wells would be drilled at the Pad, Mound and East Trenches. Water from these wells would be pumped to a central location for treatment through pipes that would probably be laid underground. Location of the treatment unit (if not combined with the existing OU 2 water treatment unit) has not been decided, but would be expected to be in the general area of the existing unit. Treated water would be either released to the natural surface drainage system, reinjected to the groundwater system or put into the Plant's industrial water system. Collecting groundwater and releasing it to the Plant's industrial water system could reduce downstream flows and could affect wetlands downstream of the diversion area. Whether this potential is realized would depend, in part, on the location of the wells and the rate at which water was withdrawn from them.

Soils remediation by excavation, treatment and/or off-site shipment. Soils within the 17 IHSSs of OU 2 would be excavated to various depths ranging from five to 15 feet. The total area to be excavated at the IHSSs is estimated at approximately 21 acres, producing approximately 117,000 cubic yards of soil. The soil would be treated in two or three stages. First, the soil believed to contain volatile compounds would be subject to low-temperature thermal desorption to remove the volatiles. Secondly, soils containing radionuclides or metals would be subject to soil washing, or a comparable process, to remove as much of the radionuclides as feasible. This stage would be expected to clean between 60% and 80% of the soil enough that it could be returned to the site from which it was excavated. The remaining 20% to 40% would be solidified by the addition of a solidifying compound such as concrete. Solidification would increase the volume of material by approximately 40%.

Soil from IHSS 140, totalling approximately 24,600 cubic yards and believed not to contain radionuclides, would be treated, stabilized and either placed in permanent storage at an undetermined location at RFP or returned to the site from which it had been taken. The nature of the storage facility (a capped pile, above-ground or below-ground constructed facility, etc.) is not known, but would permanently cover a significant area.

As an alternative to excavation and treatment, soils excavated from the East Trenches and other areas may be treated in place by vapor extraction. This technique involves drilling injection and recovery wells at selected locations. Typically, a group of injection wells surrounds one or more recovery wells. Air enters through the injection wells, flows horizontally through contaminated soil collecting vapors from the contaminants, and is withdrawn through the recovery well. After being recovered, the vapors are stripped from the air by granular activated charcoal or another off-gas process, collected and disposed of. In-place treatment would substantially reduce the amount of soil excavated.

Soil from other IHSSs believed to contain radionuclides would be excavated, treated and solidified. Between 36,400 cubic yards of soil from 6 IHSSs and 92,300 cubic yards of soil from 16 IHSSs could be excavated and treated. In the case of the larger volume, treatment would result in an estimated 48,900 cubic yards of soil clean enough to be returned to the site from which it had been taken or stored elsewhere at RFP and 43,400 cubic yards (which would expand to 60,760 cubic yards due to solidification) to be shipped offsite for appropriate disposal.

In addition, up to 40 acres south and east of the 903 Pad, which may have surficial plutonium contamination, may have its top four-to-six inches of soil removed. The resulting 32,300 cubic yards of soil would be excavated and treated. It is estimated that, after treatment, approximately two-thirds of the soil (21,300 cubic yards) would be clean enough to place back on the site from which it was excavated while the remainder (10,800 cubic yards) would be solidified (increasing its volume to approximately 15,100 cubic yards) and shipped off-site for appropriate disposal. Thus, total volume of soil to be shipped off-site is estimated at up to approximately 75,860 cubic yards. All excavated areas would be regraded and revegetated.

The environmental impacts of temporarily or permanently removing soil from up to 61 acres will be substantially mitigated by:

- after treatment, returning 60% to 80% of the soil to the site from which it was taken;
- regrading and contouring the site to be consistent with adjacent natural topography;
- reseeded/revegetating the disturbed area.

In addition, it should be noted that the areas that could be disturbed by the Proposed Action consist of xeric grasslands of a type common at RFP and along the alluvial fan known as Rocky Flats. The vegetation and soils that would be disturbed have no known unique or unusual qualities among local habitats; the same type of vegetation and soils are common throughout the surrounding area.

It is not presently possible for RFP to ship contaminated soils (or other contaminated material) off site either because of unresolved issues between RFP and potential receiving sites regarding meeting waste acceptance criteria or because of operational issues at the potential receiving sites. However, it is expected that, by the time remedial actions at OU 2 are initiated, planned for 1996, it will be possible for RFP to ship contaminated material to the Nevada Test Site and/or the Waste Isolation Pilot Project in New Mexico. If it remains impossible for RFP to ship contaminated soils from remediation projects off site at the time needed for remediation of OU 2, it is likely that an additional storage facility would have to be constructed at RFP to store soils not only from OU 2, but from other OUs as well. The size, type and location(s) of any such facility have not yet been determined.

4.0 POTENTIAL ENVIRONMENTAL ISSUES

4.1 Soils, Wildlife and Habitat

Remediation of soils at OU 2 could result in the excavation of soils five-to-fifteen feet deep over an area of 21 acres and the removal of the top approximately 6 inches of soil from another 40 acres. This soil would be treated. After treatment, 60% to 80% of the soil would be replaced where it was removed, a portion would be permanently disposed of elsewhere at RFP and the remainder would be sent off site for appropriate disposal.

Environmental impacts could include destruction of the surficial soil environment at up to 61 acres from which soil was removed and at the several acres occupied by the permanent storage site at RFP. All habitat in the area being remediated would be destroyed and animals living in or depending on the area would be forced to find alternative habitat. Some of these animals would not survive the excavation or replacement activity. Topography of the excavated area would be different after replacement of the soil because less soil would be replaced than was removed. All vegetation would be removed and natural soil horizons eliminated. Grading, contouring and reseeding/revegetation of disturbed areas would be part of the project. These efforts would be expected to return the sites to a condition in which they would provide essentially the same habitat qualities now provided.

Vegetation and habitat under the area selected for permanent disposal of soil would not return. The soil pile would be capped or otherwise protected from natural forces so that it would not support any type of habitat.

4.2 Surface Water

The only surface waters in the area of the 903 Pad, Mound and East Trenches that are in an area likely to be subject to remedial activities are seeps and their outflow in the area of several surface water sampling stations (including SW 50, for example) near the Plant's perimeter road southeast of the 903 Pad. The outflow supports small areas of wetland vegetation. It is possible that extraction of groundwater for treatment would affect the seeps and their attendant wetlands. In the absence of a plan detailing well location, numbers and pumping rates, the probability and possible extent of any effect cannot be ascertained at this time.

Extraction of groundwater for treatment also has the potential to affect downstream wetlands along South Walnut Creek if the treated water is not returned to the natural drainage system near the area of its withdrawal. Surface and underground water currently sustain wetland vegetation between the diversion and return points for water treated by the OU 2 surface water interim action. This would be expected to continue to be the case if this project were undertaken, though it is possible that collection wells could affect groundwater flows, diminishing the underground water available to this vegetation.

Preventive measures would be taken to minimize the possibility of excavations at the East Trenches resulting in sediment flow to Woman or Walnut Creeks. Consequently, it is not anticipated that sediment would leave the immediate area of the excavations.

4.3 Groundwater

Excavations up to 15 feet deep would be likely in the East Trenches area. Shallow groundwater, where it exists at all, is generally 25 feet or more below the surface in the area of the East Trenches. Consequently, planned excavations in this area should not affect groundwater.

The area of the Mound at OU 2 has no shallow groundwater.

Excavations at the 903 Pad are planned to be approximately 8 feet deep. Groundwater at the 903 Pad, where it exists, is generally about 15 feet below the surface, so remedial activities there would not have any effect on groundwater.

4.4 Human Health

Excavation of areas containing radioactive and/or hazardous materials has the potential to present risks to workers by exposing them to the materials. This risk would be substantially mitigated by operational procedures in place at RFP designed to protect workers from such possibilities. Consequently, risks to workers are expected to be well within acceptable limits.

Many of the procedures that protect workers will also act to protect the public from risks associated with this project

**SILVERMAN BRIEFING
OPERABLE UNIT NO. 2
CERCLA/NEPA INTEGRATION
EIS/EA RECOMMENDATION**

- ISSUE:** ER is recommending preparation of an EA not an EIS. OU 2 soil studies show that near surface contaminants (i.e., radionuclides) are not mobile. Large scale excavation of OU 2 surficial soils would likely re-suspend contaminants and may present a greater environmental impact than leaving contaminants in place and using in-situ treatment technologies.
- PROS:**
- EA reduces project cost and schedule impacts.
 - EA may result in a Finding of No Significant Impact (FONSI) satisfying NEPA requirements. (The EIS will definitely satisfy all NEPA requirements.)
- CONS:**
- EPA and CDH may require remediation for which an EIS should have been prepared creating a potential stipulated penalties situation for OU 2 because of schedule delays incurred while an EIS is prepared.
 - EIS may take as long as 2 years and \$1 million to complete.
 - DOE may have greater NRDA liability if an EA is not considered adequate in evaluating the remedial impacts because the EA does not indemnify DOE from future natural resource damage claims.
 - EA does not require public involvement as does an EIS.
- RECOMMENDATION:**
- Approve the recommendation to prepare an EA for the OU 2 proposed remedial action and forward it to EH-25 and EM-453 for review .
 - Incorporate public involvement in the EA by public briefing using Quarterly Public Meeting forum.